

## REMARKS

Prior to entry of this amendment, claims 1-40 are pending in the subject application. Claims 9-18 and 27-35 have been withdrawn in connection with the election requirement mailed on December 28, 2005. By the instant amendment, claims 1, 5, 19, 36, and 37 are amended. No new matter is added. Claims 1 and 19 are independent.

Applicants respectfully request, in connection with the next Office action, the Examiner's acknowledgement and acceptance of applicants' English translation of the foreign priority document and statement that the English translation of the certified copy is accurate, filed on October 26, 2006.

### A. Introduction

In the outstanding Office action,

- (a) claims 1, 2, 36, 39, and 40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0060704 to Suzuki ("the Suzuki reference") in view of U.S. Patent No. 6,726,312 to Fujimura et al. ("the Fujimura et al. reference");
- (b) claims 1, 2, 36, 39, and 40 were rejected under 35 U.S.C. § 102(b)<sup>1</sup> as being anticipated by U.S. Patent No. 6,139,132 to Yasukawa et al. ("the Yasukawa et al. reference") in view of the Fujimura et al. reference;
- (c) claims 19 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Suzuki reference in view of U.S. Patent Publication No. 2003/0122895 to Torgerson et al. ("the Torgerson et al. reference"); and

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<sup>1</sup> It is assumed the Examiner intended the rejection to be under U.S.C. § 103(a).

(d) claims 3-8, 21-26, 37, and 38 were objected to as being dependent upon a rejected base claim, but they were indicated as allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims.

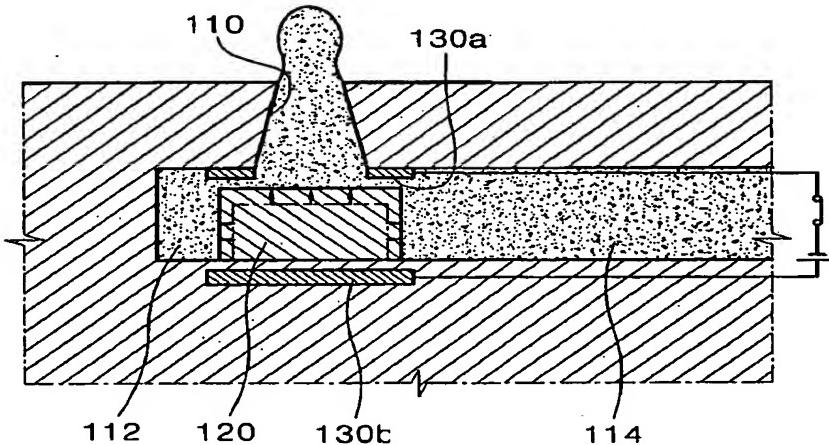
**B. Asserted Obviousness Rejection over the Suzuki and Fujimura et al. references**

In the outstanding Office action, claims 1, 2, 36, 39, and 40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Suzuki reference in view of the Fujimura et al. reference. Applicants respectfully traverse this rejection for at least the reasons set forth below.

**No Prima Facie Case of Obviousness is Established**

Independent claim 1 has been amended, as supported at least by FIG. 8B, to recite that a droplet ejector includes, *inter alia*, a volumetric structure having a predetermined *volumetric size* that is *contained entirely within the fluid path*. In this respect, FIG. 8B of the present application is reproduced below.

**FIG. 8B**



As clearly shown in FIG. 8B of the present application reproduced above, a volumetric structure 120 is *entirely within a fluid path*. Applicants respectfully submit that

the Suzuki reference and the Fujimura et al. reference, whether alone or in combination, fail to teach or even remotely suggest a volumetric structure as recited in claim 1.<sup>2</sup> Accordingly, applicants respectfully reiterate that the Suzuki reference and the Fujimura et al. reference, whether alone or in combination, fail to teach or even remotely suggest each and every element of claim 1.

Lack of Motivation to Combine

Additionally, applicants respectfully submit that there is no motivation to combine the Suzuki reference and the Fujimura et al. reference. In the outstanding Office action, with respect to independent claim 1, the Suzuki reference is indicated as lacking a disclosure of a volumetric structure varying in at least two directions simultaneously.<sup>3</sup> The Fujimura et al. reference is then relied on as teaching the above-mentioned missing element from the Suzuki reference, and asserted as a reference that would have been obvious to combine with the Suzuki reference by a person skilled in the art. *Id.* Applicants respectfully disagree.

It is well-settled law that for a claimed invention to be rejected on grounds of obviousness, “some objective teaching in the prior art or … knowledge generally available to one of ordinary skill in the art would [suggest an] individual *to combine the relevant teachings* of the references.” *Tec Air Inc. v. Denso Manufacturing Michigan Inc.*, 52 USPQ2d 1294, 1298 (Fed. Cir. 1999) (*emphasis added*). However, if upon reading the reference, a person of ordinary skill is *discouraged* from following the path set out in the reference or the suggested combination of references would require a *substantial reconstruction* of the [primary reference],

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<sup>2</sup> Applicants respectfully submit that, as illustrated in FIGS. 2A-3B of the Suzuki reference, the Suzuki reference teaches a structure having *only a portion*, rather than the entire volumetric structure, *within* the fluid path. Applicants further submit that the Fujimura et al. reference fails to teach a volumetric structure in the fluid path, much less a volumetric structure having a predetermined volumetric size that is contained entirely within the fluid path. *The Fujimura et al. reference*, FIG. 1.

<sup>3</sup> Page 3 of the Office Action of November 6, 2007.

no motivation to combine the references exists. See, *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994) (*emphasis added*); MPEP § 2143.01.

In this respect, applicants respectfully note that the Fujimura et al. reference teaches use of an external piezoelectric layer that, as indicated in the Office action,<sup>4</sup> expands in one direction while contracting in another direction. Applicants further note that the Suzuki reference, on the other hand, teaches use of an internal piezoelectric element as part of the wall of the ink channel/chamber. *The Suzuki reference*, FIGS. 2A-3B. As such, applicants respectfully submit that a person of ordinary skill in the art would be *discouraged* from using the *contracting* piezoelectric layer of the Fujimura et al. reference in the Suzuki reference.

More specifically, use of the piezoelectric layer of the Fujimura et al. reference in the piezoelectric actuator 20 of the Suzuki reference would require substantial reconstruction of the ink jet head of the Suzuki reference. For example, if the piezoelectric element 50 expands in the vertical direction as indicated in FIGS. 2A-3B of the Suzuki reference, the piezoelectric element 50 may contract along a horizontal direction, thereby forming gaps, e.g., between the wall piezoelectric actuator 20 and the piezoelectric element 50, and causing ink leakage. In another example, if the piezoelectric element 50 expands in the vertical direction as indicated in FIGS. 2A-3B of the Suzuki reference, the piezoelectric element 50 may contract along an axis oriented away from the page, thereby countering the effect of the piezoelectric vertical expansion.<sup>5</sup> Accordingly, applicants respectfully reiterate that a person of ordinary skill in the art would not have been motivated to incorporate the teachings of the Fujimura et al. reference into the teaching of the Suzuki reference at least for the reason stated above.

In view of the above, applicant respectfully submit that the Suzuki reference and the Fujimura et al. reference cannot be said to suggest the subject matter of the present

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<sup>4</sup> Page 3 of the Office action of November 6, 2007.

<sup>5</sup> Since the piezoelectric element 50 forms a portion of the wall of the ink chamber/channel, contraction of the piezoelectric element 50 would increase the volume in the cavity 16, thereby reduce pressure on the ink therein.

application, much less provide a proper combination thereof to form the droplet ejector as recited in claim 1. Accordingly, claim 1 is allowable over the cited prior art. Claims 2, 36, 39, and 40 depend from claim 1, and therefore, are allowable for at least the same reasons as claim 1. Therefore, applicants respectfully request favorable reconsideration and withdrawal of the rejections of claims 1, 2, 36, 39, and 40.

C. Asserted Obviousness Rejection over the Yasukawa et al. and Fujimura et al. references

In the outstanding Office action, claims 1, 2, 36, 39, and 40 were rejected under 35 U.S.C. § 102(b),<sup>6</sup> as being anticipated by the Yasukawa et al. reference in view of the Fujimura et al. reference. Applicants respectfully traverse this rejection for at least the reasons set forth below.

Independent claim 1 has been amended, as supported at least by FIG. 8B, to recite that a droplet ejector includes, *inter alia*, a volumetric structure having a predetermined *volumetric size* that is *contained entirely within the fluid path*. Applicants respectfully submit that the Yasukawa et al. reference and the Fujimura et al. reference, whether alone or in combination, fail to teach or even remotely suggest a similar structure of a volumetric structure in a droplet ejector.<sup>7</sup> Accordingly, applicants respectfully reiterate that the Yasukawa et al. reference and the Fujimura et al. reference, whether alone or in combination, fail to teach or even remotely suggest each and every element of claim 1. Therefore, claim 1 is allowable over the cited prior art. Claims 2, 36, 39, and 40 depend from claim 1, and therefore, are allowable for at least the same reasons as claim 1. Accordingly, applicants

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<sup>6</sup> It is assumed the Examiner intended the rejection to be under U.S.C. § 103(a)

<sup>7</sup> Applicants respectfully submit that, as illustrated in FIGS. 1-2 of the Yasukawa et al. reference, the Yasukawa et al. reference teaches a structure that is *on* a pressurized chamber, *rather than entirely within the fluid path*. Applicants further respectfully submit that the Fujimura et al. reference fails to teach a volumetric structure in the fluid path, much less a volumetric structure having a predetermined volumetric size that is contained entirely within the fluid path. *The Fujimura et al. reference*, FIG. 1.

respectfully request favorable reconsideration and withdrawal of the rejections of claims 1, 2, 36, 39, and 40.

D. Asserted Obviousness Rejection of Claims 19 and 20

In the outstanding Office action, claims 19 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Suzuki reference in view of the Torgerson et al. reference. Applicants respectfully traverse this rejection for at least the reasons set forth below.

Independent claim 19 has been amended, as supported at least by FIG. 13, to recite that a droplet ejector includes, *inter alia*,

a manifold on a substrate;  
a barrier layer on the substrate;  
a nozzle plate on the barrier layer, the nozzle plate including a nozzle;  
an ink chamber between the barrier layer and the nozzle plate; [and]  
an ink channel on the barrier layer and in communication with the ink chamber and the manifold.

Applicants respectfully submit that the Suzuki reference and the Torgerson et al. reference, whether alone or in combination, fail to teach or even remotely disclose a droplet ejector as currently recited in claim 19. More specifically, the Suzuki reference and the Torgerson et al. reference, whether alone or in combination, fail to teach a droplet ejector configured to have a manifold and a barrier layer on a substrate, and an ink channel, an ink chamber, and a nozzle plate on the barrier layer, so the ink chamber is between the barrier layer and the nozzle plate. Accordingly, applicants respectfully reiterate that the Suzuki reference and the Torgerson et al. reference, whether alone or in combination, fail to teach or even remotely suggest each and every element of claim 19, and therefore, claim 19 is allowable for at least this reason. Claim 20 depends from claim 19, and therefore, is

allowable at least for the same reasons as claim 19. Applicants respectfully request favorable reconsideration and withdrawal of claims 19-20.

E. Allowable Subject Matter

Applicants note with appreciation the Examiner's indication of allowable subject matter in claims 3-8, 21-26, 37, and 38. Applicants, however, respectfully submit that all claims are currently in condition for allowance.

F. Rejoinder of Withdrawn Claims

Claims 9-18 and 27-35 depend, directly or indirectly, from the pending independent claims 1 and 19. Thus, it is respectfully requested that in the event that claims 1 and 19 are found to be allowable, withdrawn dependent claims 9-18 and 27-35 be rejoined.

G. Conclusion

The above remarks demonstrate the failings of the arguments in the Office action with respect to the outstanding rejection, and are sufficient to overcome them. However, these remarks are not intended to, nor need they, comprehensively address each and every reason for the patentability of the claimed subject matter over the applied prior art. Accordingly, Applicants *do not* contend that the claims are patentable solely on the basis of the particular claim elements discussed above.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In view of the foregoing amendments and remarks, reconsideration of this application is earnestly solicited, and an early and favorable further action upon all the claims is hereby requested.

Respectfully submitted,

LEE & MORSE, P.C.

Date: February 5, 2008

  
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**PETITION and**  
**DEPOSIT ACCOUNT CHARGE AUTHORIZATION**

This document and any concurrently filed papers are believed to be timely. Should any extension of the term be required, Applicants hereby petitions the Director for such extension and requests that any applicable petition fee be charged to Deposit Account No. 50-1645.

If fee payment is enclosed, this amount is believed to be correct. However, the Director is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-1645.

Any additional fee(s) necessary to effect the proper and timely filing of the accompanying-papers may also be charged to Deposit Account No. 50-1645.